

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN. NO. 09/889,625

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A process for producing chlorine comprising the step of oxidizing hydrogen chloride in a gas containing hydrogen chloride with a gas containing oxygen in the presence of a catalyst, wherein the oxidation of hydrogen chloride is carried out in at least two reaction zones each comprising a catalyst-packed layer, which are arranged in series, and a temperature in at least one of said reaction zones is controlled with a heat exchange system, which provides a jacket outside said at least one reaction zone, wherein said jacket contains a heating medium that removes the heat of reaction generated by the reaction in ~~the tubular reactors~~ said at least one of said reaction zones; and wherein said gas containing hydrogen chloride and said gas containing oxygen are simultaneously introduced in at least the first reaction zone, wherein at least two reaction zones each comprising a catalyst-packed layer, which are arranged in a series, are formed by packing at least two kinds of catalysts in a tubular reactor; and/or by independently controlling the temperatures of said at least two reaction zones.

2. (canceled).

3. (canceled).

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4. (original): The process according to claim 1, wherein the temperatures in at least two reaction zones are controlled with a heat exchange system.

5. (original): The process according to claim 1, wherein the temperatures in all the reaction zones are controlled with a heat exchange system.

6. (original): The process according to claim 1, wherein the ratio of the first reaction zone, in which the raw materials are firstly supplied among at least two reaction zones each comprising a catalyst-packed layer, which are arranged in series, is 70 % by volume or less based on the total volume of all the reaction zones.

7. (original): The process according to claim 1, wherein the reaction zones are packed with substantially the catalyst only, a mixture of substantially the catalyst and an inactive material, a mixture of substantially the catalyst and a carrier, or a mixture of substantially the catalyst, the inactive material and the carrier so that the thermal conductivity becomes highest in the first reaction zone.

8. (original): The process according to claim 1, wherein the reaction zones are packed with substantially the catalyst only, a mixture of substantially the catalyst and an inactive material, a mixture of substantially the catalyst and a carrier, or a mixture of substantially the catalyst, the inactive material and the carrier so that the thermal conductivity in the reaction

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zones successively decreases from the first reaction zone to the last reaction zone along the direction of the gas flow.

9. (original): The process according to claim 1, wherein the reaction zones are packed with substantially the catalyst only, a mixture of substantially the catalyst and an inactive material, a mixture of substantially the catalyst and a carrier, or a mixture of substantially the catalyst, the inactive material and the carrier so that the activities of the reaction zones successively increase from the first reaction zone to the last reaction zone along the direction of the gas flow.

10. (original): The process according to claim 1, wherein a gas temperature at the exit of the last reaction zone is in the range between 200 and 350°C.

11. (original): The process according to claim 1, wherein a superficial linear velocity of the gas in the column is from 0.2 to 10 m/sec.

12. (original): The process according to claim 1, wherein the volume of the gas containing oxygen is divided and supplied in the reaction zones.

13. (new): The process according to claim 1, wherein oxygen is used in an amount of 0.25 to 2 moles per one mole of hydrogen chloride.

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14. (new): The process according to claim 1, wherein the mixed gas of hydrogen chloride and oxygen containing at least 66.7% of hydrogen chloride is introduced in the first reaction zone.